UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/814,642	03/22/2001	Jeremy J. O'Hare	EMS-01501	4331

7590 10/31/2005

MUIRHEAD AND SATURNELLI
200 FRIBERG PARKWAY, SUITE 1001
WESTBOROUGH, MA 01581

EXAMINER	
GREY, CHRISTOPHER P	
ART UNIT	PAPER NUMBER
2667	

DATE MAILED: 10/31/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/814,642	O'HARE ET AL.	
	Examiner	Art Unit	
	Christopher P Grey	2667	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 March 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-76* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) *1-76* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claim 1-93 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stevens et al. (US 5949760) in view of Bertin et al. (US 6400681) in further view of Ardon (US 5751800)

<u>Claim 1</u> Stevens et al. ('Stevens' hereinafter) discloses a method for establishing communication between nodes (storage device) in a mulithop network. Stevens particularly establishes a multi-hop communication network between nodes (see fig 2 and Col 2 lines 28-43).

Stevens does not disclose identifying one of a plurality of types of calls, determining a communication path between a first data storage device and a target data storage device; determining a first communication connection between said first data storage device and a second data storage device included in the communication path; and sending a data operation request to said second data storage device.

Bertin et al. (Bertin 'hereinafter') discloses a method establishing a communication network between a plurality of nodes interconnected with transmission links. Within each node (storage device) there is a storage of routing paths, which are constantly updated (see Col 7 line 40-44). Bertin also discloses for each connection request, selecting a pre-calculated path from source node to destination node

(disclosed in Col 5 line 60- Col 6 lines17). Furthermore, Bertin discloses within a connection set up process, a connection request being specified (disclosed in Col 11 lines 44-49). Bertin follows up the disclosed connection request by adding links and nodes on a hop-by-hop basis (sending data request to a second storage device), as disclosed in Col 12 line 56 – Col 13 line 9.

The combined teachings of Bertin and Stevens does not disclose identifying one of a plurality of types of calls

Ardon discloses an originating calling party (first data storage system) issuing a call request specifying call type data, in accordance with a code (Col 2 lines 56-Col 3 line 2) that identifies the party originating the call request as one of a plurality of call categories. In response to the call type, a switch processes the incoming call accordingly (Col 1 lines 42-58).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the establishing of a communication path and the routing of data as disclosed by Stevens, with the method provided by Bertin, who acknowledges the nodes as described by Stevens, and further provides a method with a defined communication connection, and determines dynamically the optimal route. Bertin also provides the option of a predetermined path and an alternate communication path. Both Bertin and Stevens disclose setting up a communication network between a number of nodes based on a data table, Stevens simply establishes a multi hop network as disclosed in Stevens Col 1 lines 44-60. The motivation for the above mentioned modifications are to optimize and efficiently manage the connection and communication

of nodes within a dynamic communications network (Stevens Col 1 lines38-41 and Bertin Col 5 lines40-43). The modifications also allow the routing of a multihop communication, with the option of a suitable path under regular conditions and also in the event of any failure or malfunction.

Furthermore, it would have been obvious to one of the ordinary skill in the art at the time of the invention to combine the teachings of Stevens and Bertin, as disclosed above, with the identifier within a request as disclosed by Ardon, where that identifier identifies a call type, and that call type being one of a multihop type as disclosed by Stevens, and a multipath type as disclosed by Bertin.

<u>Claim 2, 6</u> Stevens discloses all of the limitations of claim 2, but fails to disclose a communication connection being one of: a local area network, a storage area network, or a data storage connection.

Bertin discloses a typical model of communications system, containing a plurality of nodes (storage devices) connected as seen in elements 200-209 in Fig 2, which forms a network (SAN). Bertin also discloses the connection of a LAN as seen in element 214 in Fig 2. The motivation for these claims is the same as for claim 1.

<u>Claim 3</u> Stevens does not specifically disclose the first connection being a data storage connection that is a remote storage facility connection and connecting first data storage device and second data storage device.

Bertin discloses a typical model of communications system, containing a plurality of nodes (storage devices) connected as seen in elements 200-209 in Fig 2, which forms a network (SAN). Bertin also discloses nodes within several user networks

communicating with nodes within other user networks (remote connection) as disclosed in Col 6 lines50-67.

It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the communication between nodes as disclosed by Stevens, to perform communication between nodes within the same network, and nodes from other networks as disclosed by Bertin. The motivation for this modification is to ensure communication amongst different networks.

Claim 4 Stevens discloses all of the limitations of claim 4, but fails to disclose predetermining a portion of a communication path from a first data storage device to a target data storage device.

Bertin discloses a pre-calculated path satisfying a connection request, and also calculating paths from the origin node (first storage device) to all possible destination nodes (target storage device), as disclosed in Col 5 line 60- Col 6 line 17. The motivation for this claim is the same as for claim 1.

Claim 5 Stevens discloses communication between nodes, which uses an optimization method for connectivity of these nodes. Stevens discloses a potential link assignment (see element 38 in fig 2) that assigns links between neighboring nodes, where intermediate nodes clearly exist.

Claim 7, 8, 9, 10, 11, 12, 15 Stevens discloses the method of accommodating dynamic communication between nodes of the network as disclosed in Col 2 lines 29-44. Stevens does not disclose determining a second intermediate data storage device from a plurality of data storage devices connected to the first data storage device.

Bertin also discloses dynamically determining a communication path and within a node, a route controller that calculates the optimum path through the network, including the number of intermediate nodes as disclosed in Col 8 lines 29-44. Furthermore Bertin discloses a typical model of communications system, containing a plurality of nodes (storage devices) connected as seen in elements 200-209 in Fig 2, which forms a network (SAN). Bertin also discloses the connection of a LAN as seen in element 214 in Fig 2. The motivation for these claims is the same as for claim 1.

<u>Claim 13</u> Stevens particularly establishes a multi-hop communication network between nodes (see fig 2 and Col 2 lines 28-43).

Stevens fails to disclose including information about the communication path in the data structure when the operation request is a multipath multihop system call.

Bertin discloses a pre-calculated path satisfying a connection request, and also calculating paths (information about the communication path) from the origin node (first storage device) to all possible destination nodes (target storage device), as disclosed in Col 5 line 60- Col 6 line 17.

The combined teachings of Stevens and Bertin do not specifically disclose the information within the data structure of the data operation request.

Ardon discloses sending a data operation request that contains call data, which identifies the call as one of a number of categories (Col 1 lines 40-57).

Therefore it would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the establishing of a communication path and the routing of data as disclosed by Stevens, with the identifier within a request as disclosed by

Ardon, where that identifier identifies a call type which identifies a call category, and that call type being one of a multihop type as disclosed by Stevens, and a multipath type as disclosed by Bertin.

Claim 14 Stevens discloses all of the limitations of claim14, but fails to disclose information including data about a portion of the communication path that is predetermined.

Bertin discloses a pre-calculated path satisfying a connection request, and also calculating paths from the origin node (first storage device) to all possible destination nodes (target storage device), as disclosed in Col 5 line 60- Col 6 line 17. The motivation for this claim is the same as for claim 1.

Claim 16, 17 Stevens discloses all of the limitations of claims 16 and 17, but fails to disclose determining at least one additional communication path or using at least one additional path between the first data storage device and a target data storage device.

Bertin discloses in the case of a node failing, the origin node being able to establish alternative connections as disclosed in Col 5 lines 5-7. Furthermore, Bertin discloses a routing base table that contains a number of paths that may match the path from a particular origin node to a destination node, or from one node to another, as disclosed in (see fig 11) Col 17 lines 28-53. Bertin also discloses an alternative path computation procedure as disclosed in Col 19 line 51- Col 20 line 30 (see fig 9). The motivation for these claims is the same as for claim 1.

Claim 18, 19, 20 Stevens discloses a method for assigning communication links in a dynamic communication network of nodes as disclosed in Col 3 lines 55-65

Stevens fails to disclose sending said data operation request on said first communication path and said at least one additional communication path such that said data operation request is directed to said target data storage device on a plurality of communication paths. Stevens also fails to disclose dynamically determining additional communication paths using modifiable parameters.

Bertin discloses the option of a node supporting multiple connections set up requests simultaneously as disclosed in Col 4 lines 22-34. Bertin also dynamically assigns alternate paths as the topology database is constantly updated as disclosed in Col 9 line 32- Col 10 line 3. The path selection process uses an algorithm that uses as input parameters, the user requirements (modifiable) and the status of the network links and nodes as maintained by the topology database (modifiable) as disclosed in Col 12 lines 1-11. Furthermore Bertin discloses quality of service parameters that are defined as a set of measurable quantities as disclosed in Col 12 lines17-24. The motivation for these claims is the same as for claim 1.

<u>Claim 21</u> Stevens discloses all of the limitations of claim 21 but fails to disclose a quantity corresponding to a number of additional communication paths that is determined in accordance with network traffic.

Bertin discloses the path selection process being determined based on current traffic conditions as disclosed in Col 5 lines 25-29. The motivation for this claim is the same as for claim 1.

<u>Claim 22</u> Stevens et al. ('Stevens' hereinafter) discloses a method for establishing communication between nodes (storage device) in a mulithop network. Stevens

particularly establishes a multi-hop communication network between nodes (see fig 2 and Col 2 lines 28-43).

Stevens does not disclose determining a communication path between a first data storage device and a target data storage device; not disclose determining at a first data storage system in accordance with an opcode, whether the data operation request is a multipath multihop system call, where the data operation request includes a data structure comprising the opcode as a parameter identifying one of a plurality of call types, and forwarding the data operation request in response to the determination; sending a data operation request to a first storage device connected to a host computer system by one of a local area network and a storage area network.

Bertin shows (see fig 2) a network consisting of a host computer (element 213) connected to a number of nodes (storage devices- elements 201-208) that forms a storage area network (element 200). The host and first storage device (node-element205) are connected through a LAN (element 214). Within the network a destination path is determined as disclosed in Col 6 lines 1-17. This determined path may consist of a number of intermediate nodes depending on the optimal path chosen (as disclosed in Col 8 lines 17-28). The origin node (first storage device), the transit node (intermediate node) and the destination node exchange information using the connection requests as disclosed in Col 11 lines 44-60. Bertin discloses a typical model of communications system, containing a plurality of nodes (storage devices) connected as seen in elements 200-209 in Fig 2, which forms a network (SAN). Bertin also discloses the connection of a LAN as seen in element 214 in Fig 2.

The combined teachings of Stevens and Bertin do not disclose determining at a first data storage system in accordance with an opcode, whether the data operation request is a multipath multihop system call, where the data operation request includes a data structure comprising the opcode as a parameter identifying one of a plurality of call types, and forwarding the data operation request in response to the determination.

Ardon discloses an originating calling party (first data storage system) issuing a call request specifying call type data, in accordance with a code (Col 2 lines 56-Col 3 line 2) that identifies the party originating the call request as one of a plurality of call categories. In response to the call type, a switch processes the incoming call accordingly (Col 1 lines 42-58).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the establishing of a communication path and the routing of data as disclosed by Stevens, with the method provided by Bertin, who acknowledges the nodes as described by Stevens, and further provides a method with a defined communication connection, and determines dynamically the optimal route. Bertin also provides the option of a predetermined path and an alternate communication path. Both Bertin and Stevens disclose setting up a communication network between a number of nodes based on a data table, Stevens simply establishes a multi hop network as disclosed in Stevens Col 1 lines 44-60. The motivation for the above mentioned modifications are to optimize and efficiently manage the connection and communication of nodes within a dynamic communications network (Stevens Col 1 lines38-41 and Bertin Col 5 lines40-43). The modifications also allow the routing of a multihop

communication, with the option of a suitable path under regular conditions and also in the event of any failure or malfunction.

Furthermore, it would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the combined teachings of Stevens and Bertin, as disclosed above, with the identifier within a request as disclosed by Ardon, where that identifier identifies a call type, and that call type being one of a multihop type as disclosed by Stevens, and a multipath type as disclosed by Bertin.

Claim 23 Stevens does not disclose a communication connection being one of a storage area network, a local area network, and a device storage connection.

Bertin shows within the network (see Fig 2), a device storage connection (element 209) between nodes, a LAN connection (element 214) and a SAN (220) comprised of a number of nodes (elements 201-208).

The motivation is the same as that for claim 22.

Claim 24 Stevens does not disclose dynamically determining a portion the communication path, and including data describing the portion within the data structure.

Bertin discloses an optimal path selection (dynamic) as disclosed in Col 8 lines 17-44. Bertin does not specifically disclose the data structure.

Ardon discloses the connection request containing data relating to the call as disclosed in the rejection of claim 22, where it would have been obvious to one of the ordinary skill in the art at the time of the invention to combine the request issued as disclosed by Ardon, with the path finding as disclosed by Bertin, where the path found could be specified within the request.

Claim 25 Stevens does not disclose pre-determining a portion the communication path, and including data describing the portion within the data structure.

Bertin discloses the pre-calculation of the communication path in an instructional format, satisfying a connection request (disclosed in Col 5 line 60- Col 6 line 17). Bertin does not specifically disclose the data structure.

Ardon discloses the connection request containing data relating to the call (see abstract), where it would have been obvious to one of the ordinary skill in the art at the time of the invention to combine the request issued as disclosed by Ardon, with the path finding as disclosed by Bertin, where the path found could be specified within the request.

Claim 26 Bertin discloses a pre-calculated path satisfying a connection request, and also calculating paths from the origin node (first storage device) to all possible destination nodes (target storage device), as disclosed in Col 5 line 60- Col 6 line 17. Bertin discloses a Routing Database Update that prepares for alternative communication paths as disclosed in Col 19 line 51- Col 20 line 30 (see fig 9).

Claim 27 Bertin discloses alternative connections in the case of node or link failure (disclosed in Col 5 lines 5-7). Bertin also discloses an alternative path computation procedure as disclosed in Col 19 line 51- Col 20 line 30 (see fig 9).

Claim 28 Stevens discloses a method for establishing communication between nodes (storage devices) in a mulithop network. Stevens particularly establishes a multi-hop communication network between nodes (see fig 2 and Col 2 lines 28-43). Stevens does not disclose a computer system comprising a host initiating a data operation

request; each of communication connections including at least one of a storage area network and a local area network; wherein each of the three or more data storage devices includes machine executable code for:

receiving and interpreting said data operation request over the communication connection that is one of a local area network and a storage area network;

determining in accordance with an opcode, the data operation request including a data structure with opcode as a parameter identifying one of a plurality of types of calls, and if the data operation request is a multipath multihop system call; and

forwarding, in response to determining that the data operation is a multipath multihop system call, a second portion of the data associated with said the data operation request to another of the three or more data storage devices.

Bertin discloses a method and system for determining a communication path among a plurality of nodes. Bertin discloses(see fig 2) a network comprising a host computer (Element 213) connected to several nodes (element 201-208) that are configured to form a SAN (element 200). The communication connection between the host and nodes is one of a SAN as previously mentioned and LAN (element 214). Furthermore, Bertin discloses a control field that includes encoded identification of a protocol to be processed in the node. This encoded identification is a clear indication of the use of machine executable code in the nodes. After receiving the connection request and establishing a connection (establishing a multipath multihop system call) there is no longer a need for the destination address within the packet header, so

therefore an identifier is embedded within the packet (second portion), and the packet is sent to the next node (disclosed in Col 3 lines 15-54).

The combined teachings of Stevens and Bertin does not specifically disclose determining in accordance with an opcode, the data operation request including a data structure with opcode as a parameter identifying one of a plurality of types of calls.

Ardon discloses an originating calling party (first data storage system) issuing a call request specifying call type data, in accordance with a code (Col 2 lines 56-Col 3 line 2) that identifies the party originating the call request as one of a plurality of call categories. In response to the call type, a switch processes the incoming call accordingly (Col 1 lines 42-58).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the establishing of a communication path and the routing of data as disclosed by Stevens, with the method provided by Bertin, who acknowledges the nodes as described by Stevens, and further provides a method with a defined communication connection, and determines dynamically the optimal route. Bertin also provides the option of a predetermined path and an alternate communication path. Both Bertin and Stevens disclose setting up a communication network between a number of nodes based on a data table, Stevens simply establishes a multi hop network as disclosed in Stevens Col 1 lines 44-60. The motivation for the above mentioned modifications are to optimize and efficiently manage the connection and communication of nodes within a dynamic communications network (Stevens Col 1 lines38-41 and Bertin Col 5 lines40-43). The modifications also allow the routing of a multihop

communication, with the option of a suitable path under regular conditions and also in the event of any failure or malfunction.

Furthermore, it would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the combined teachings of Stevens and Bertin, as disclosed above, with the identifier within a request as disclosed by Ardon, where that identifier identifies a call type, and that call type being one of a multihop type as disclosed by Stevens, and a multipath type as disclosed by Bertin.

Claim 29 Stevens fails to disclose removing a first portion of data associated with the data operation request if the data operation request is a multipath multihop system call.

Bertin discloses after a connection has been established (establishing a multipath multihop call), no need for the destination address within the header. As is well known in the art, header information can be discontinued in the transmission of a packet. An identifier is used to further specify the connection (disclosed in Col 3 lines 16-54).

It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the method of routing a multihop multipath communication as disclosed by Stevens, with the method of routing data provided by Bertin, that discloses the obviousness of removing header information that has previously been used. The motivation for removing a portion of the data is to remove information that will no longer be used to complete the path.

Claim 30 Stevens fails to disclose a first data storage device connected to a second data storage device, where the second data storage device is connected to a third data storage device, and the first data storage device is connected to the host, and the data operation request being forwarded to the first data storage device and being a multipath multihop system call directing the third data storage device to respond to said data operation request.

Bertin discloses (see fig 2) within a network, a host (element 213) connected to a first node (element 205) which is further connected to a second node (element 202 or 206), which is further connected to a third node (possibly element 202, 205, 201, 208 or 206), depending on the path selected. The third node is a possible destination node and would thus be responsive to the connection request (data operation request) as disclosed in Col 5 line60- Col 6 line17. The motivation for this claim is the same as for claim 1.

Claim 31 Stevens discloses a method that establishes simultaneous communications between nodes having neighboring nodes in a multihop network of nodes (Col 1 lines 44-60). Stevens discloses all of the limitations of claim 29 but fails to disclose a host comprising machine executable code that determines a first communication path including first, second and third data storage devices, determines a second communication path using one of a storage area network and a local area network between said host and said third data storage device, sends said data operation request to the third data storage device.

Bertin discloses (see fig 2) a network comprising a host computer (Element 213) connected to several nodes (element 201-208) that are configured to form a SAN (element 200). The communication connection between the host and nodes is one of a SAN as previously mentioned and LAN (element 214). Furthermore, Bertin discloses a control field that includes encoded identification of a protocol to be processed in the node (disclosed in Col 7 lines 55-64). This encoded identification is a clear indication of the use of machine executable code in the nodes and host. Bertin also discloses an alternative path computation procedure as disclosed in Col 19 line 51- Col 20 line 30 (see fig 9). The motivation for this claim is the same as for claim 1.

Claim 32 Stevens fails to disclose first and second communication paths being alternate communication paths.

Bertin discloses alternative connections in the case of node or link failure (disclosed in Col 5 lines 5-7). Bertin also discloses an alternative path computation procedure as disclosed in Col 19 line 51- Col 20 line 30 (see fig 9). The motivation for this claim is the same as for claim 1.

Claim 33 Stevens discloses a method that establishes simultaneous communications between nodes having neighboring nodes in a multihop network of nodes. Stevens does not disclose first and second communication paths.

Bertin discloses an alternative path computation procedure as disclosed in Col 19 line 51- Col 20 line 30 (see fig 9). Bertin thus discloses a first and second communication path. The motivation for this claim is the same as for claim 1.

Claim 34 Stevens discloses a system for establishing communication between nodes (storage device) in a mulithop network. Stevens particularly establishes a multi-hop communication network between nodes (see fig 2 and Col 2 lines 28-43).

Stevens does not disclose a data operation request including a data structure comprising opcode as a parameter identifying one of a plurality of types of calls; a data storage device comprising: machine executable code for determining a communication path between the data storage device and a target data storage device; machine executable code for determining a first communication connection between data storage device and a second data storage device included in said communication path; and machine executable code for sending said data operation request to a second data storage device.

Bertin discloses a method and system for determining a communication path between a plurality of nodes. Bertin discloses a control field that includes encoded identification of a protocol to be processed in the node (disclosed in Col 7 lines 55-64). This encoded identification is a clear indication of the use of machine executable code in the nodes and host. Bertin discloses the calculation of a path from the origin node to all possible destination nodes in response to each connection request (disclosed in Col 5 line61- Col 6 line17). Fig 2 depicts a possible first (element 205) and second (element 202 or 206) storage device.

The combined teachings of Stevens and Bertin does not disclose a data operation request including a data structure comprising opcode as a parameter identifying one of a plurality of types of calls.

Ardon discloses an originating calling party (first data storage system) issuing a call request specifying call type data, in accordance with a code (Col 2 lines 56-Col 3 line 2) that identifies the party originating the call request as one of a plurality of call categories. In response to the call type, a switch processes the incoming call accordingly (Col 1 lines 42-58).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the establishing of a communication path and the routing of data as disclosed by Stevens, with the method provided by Bertin, who acknowledges the nodes as described by Stevens, and further provides a method with a defined communication connection, and determines dynamically the optimal route. Bertin also provides the option of a predetermined path and an alternate communication path. Both Bertin and Stevens disclose setting up a communication network between a number of nodes based on a data table, Stevens simply establishes a multi hop network as disclosed in Stevens Col 1 lines 44-60. The motivation for the above mentioned modifications are to optimize and efficiently manage the connection and communication of nodes within a dynamic communications network (Stevens Col 1 lines38-41 and Bertin Col 5 lines40-43). The modifications also allow the routing of a multihop communication, with the option of a suitable path under regular conditions and also in the event of any failure or malfunction.

Furthermore, it would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the combined teachings of Stevens and Bertin, as disclosed above, with the identifier within a request as disclosed by Ardon, where that

identifier identifies a call type, and that call type being one of a multihop type as disclosed by Stevens, and a multipath type as disclosed by Bertin.

Claim 35 Stevens discloses other limitations of claim 35 but fails to disclose the first communication connection being one of: a local area network, a storage area network, and a data storage connection.

Bertin discloses (see fig 2) a network consisting of a host computer (element 213) connected to a number of nodes (storage devices- elements 201-208) that form a storage area network (element 200). The host and first storage device (node-element205) are connected through the LAN (element 214). The motivation for this claim is the same as for claim 34.

Claim 36 Stevens discloses all of the limitations of claim 36 but fails to disclose machine executable code for predetermining a portion of the communication path from the data storage device to a target data storage device.

Bertin discloses a pre-calculated path satisfying a connection request, and also calculating paths from the origin node (first storage device) to all possible destination nodes (target storage device), as disclosed in Col 5 line 60- Col 6 line 17. The motivation is the same as that for claim 34

Claim 37 Stevens discloses all of the limitations of claim 37 but fails to disclose determining a first intermediate data storage device from a plurality of data storage devices connected to said data storage device', and determining a first corresponding communication connection between said data storage device and said first intermediate data storage device.

Bertin shows (see fig 2) a network consisting of a host computer (element 213) connected to a number of nodes (storage devices- elements 201-208), which forms a storage area network (element 200). The host and first storage device (node-element205) are connected through a LAN (element 214). Within the network a destination path is determined as disclosed in Col 6 lines 1-17. This determined path may consist of a number of intermediate nodes depending on the optimal path chosen (as disclosed in Col 8 lines 17-28). The origin node (first storage device), the transit node (intermediate node) and the destination node exchange information using the connection requests as disclosed in Col 11 lines 44-60. The motivation for this claim is the same as for claim 34.

<u>Claim 38</u> Stevens discloses all of the limitations of claim 38 but fails to disclose dynamically determining a portion of the communication path from the data storage device to the target data storage device.

Bertin discloses dynamically determining a communication path and within a node, a route controller that calculates the optimum path through the network, including the number of intermediate nodes as disclosed in Col 8 lines 29-44. The motivation for this claim is the same as for claim 34.

<u>Claim 39</u> Stevens discloses all of the limitations of claim 38 but fails to disclose determining an intermediate data storage device from a plurality of data storage devices connected to the data storage device.

Bertin discloses dynamically determining a communication path and within a node, a route controller that calculates the optimum path through the network, including

the number of intermediate nodes as disclosed in Col 8 lines 29-44. The motivation for this claim is the same as for claim 34.

<u>Claim 40</u> Stevens particularly establishes a multi-hop communication network between nodes (see fig 2 and Col 2 lines 28-43).

Stevens fails to disclose including information about the communication path in the data structure when the operation request is a multipath multihop system call.

Bertin discloses a pre-calculated path satisfying a connection request, and also calculating paths (information about the communication path) from the origin node (first storage device) to all possible destination nodes (target storage device), as disclosed in Col 5 line 60- Col 6 line 17.

The combined teachings of Stevens and Bertin do not specifically disclose the information within the data structure of the data operation request.

Ardon discloses sending a data operation request that contains call data, which identifies the call as one of a number of categories (Col 1 lines 40-57).

Therefore it would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the establishing of a communication path and the routing of data as disclosed by Stevens, with the identifier within a request as disclosed by Ardon, where that identifier identifies a call type which identifies a call category, and that call type being one of a multihop type as disclosed by Stevens, and a multipath type as disclosed by Bertin.

Claim 41 Stevens discloses all of the limitations of claim 41 but fails to disclose information including data about a portion of the communication path that is predetermined.

Bertin discloses a pre-calculated path satisfying a connection request, and also calculating paths from the origin node (first storage device) to all possible destination nodes (target storage device), as disclosed in Col 5 line 60- Col 6 line 17. The motivation for this claim is the same as for claim 34.

Claim 42 Stevens discloses all of the limitations of claim 42 but fails to disclose information including data about a portion of the communication path that is dynamically determined.

Bertin discloses dynamically determining a communication path and within a node, a route controller that calculates the optimum path through the network, including the number of intermediate nodes as disclosed in Col 8 lines 29-44. The motivation for this claim is the same as for claim 34.

Claim 43 Stevens discloses all of the limitations of claim 43 but fails to disclose the communication path being a first communication path, and the data storage device further comprising machine executable code for determining at least one additional communication path.

Bertin discloses a control field that includes encoded identification of a protocol to be processed in the node (disclosed in Col 7 lines 55-64). This encoded identification is a clear indication of the use of machine executable code in the nodes and host. Bertin

also discloses an alternative path computation procedure as disclosed in Col 19 line 51- Col 20 line 30 (see fig 9). The motivation for this claim is the same as for claim 34.

Claim 44 Stevens discloses all of the limitations of claim 44 but fails to disclose machine executable code for determining the use of at least one additional communication path, an alternate communication path upon the occurrence of a data transmission problem.

Bertin discloses a control field that includes encoded identification of a protocol to be processed in the node (disclosed in Col 7 lines 55-64). This encoded identification is a clear indication of the use of machine executable code in the nodes and host. Bertin discloses alternative connections in the case of node or link failure (disclosed in Col 5 lines 5-7). Bertin also discloses an alternative path computation procedure as disclosed in Col 19 line 51- Col 20 line 30 (see fig 9). The motivation for this claim is the same as for claim 34.

Claim 45 Stevens discloses a method that establishes simultaneous communications between nodes having neighboring nodes in a multihop network of nodes (Col 1 lines 44-60). Stevens fails to disclose machine executable code.

Bertin discloses a control field that includes encoded identification of a protocol to be processed in the node (disclosed in Col 7 lines 55-64). This encoded identification is a clear indication of the use of machine executable code in the nodes and host. The motivation for this claim is the same as for claim 34.

Claim 46 Stevens discloses all of the limitations of claim 46 but fails to disclose machine executable code for dynamically determining a quantity corresponding to a

number of additional communication paths used in directing the data operation request to the target data storage device.

Bertin discloses a control field that includes encoded identification of a protocol to be processed in the node (disclosed in Col 7 lines 55-64). This encoded identification is a clear indication of the use of machine executable code in the nodes and host. Bertin discloses dynamically determining a communication path and within a node, a route controller that calculates the optimum path through the network, including the number of intermediate nodes as disclosed in Col 8 lines 29-44. Bertin also discloses an alternative path computation procedure as disclosed in Col 19 line 51- Col 20 line 30 (see fig 9). The motivation for this claim is the same as for claim 34.

Claim 47 Stevens discloses all of the limitations of claim 47 but fails to disclose the quantity corresponding to the additional communication paths being a modifiable parameter.

Bertin discloses the path selection process uses an algorithm that uses as input parameters, the user requirements (modifiable) and the status of the network links and nodes as maintained by the topology database (modifiable) as disclosed in Col 12 lines 1-11. Furthermore Bertin discloses quality of service parameters that are defined as a set of measurable quantities as disclosed in Col 12 lines17-24. The motivation for this claim is the same as for claim 34.

Claim 48 Stevens discloses all of the limitations of claim 48 but fails to disclose a quantity corresponding to a number of additional communication paths used, being determined in accordance with network traffic.

Bertin discloses a pre-calculated path satisfying a connection request, and also calculating paths from the origin node (first storage device) to all possible destination nodes (target storage device), as disclosed in Col 5 line 60- Col 6 line 17. Bertin also discloses an alternative path computation procedure as disclosed in Col 19 line 51- Col 20 line 30 (see fig 9). Bertin discloses the path selection process being determined based on current traffic conditions as disclosed in Col 5 lines 25-29. The motivation for this claim is the same as for claim 34.

Claim 49 Stevens discloses a system for establishing communication between nodes (storage device) in a mulithop network. Stevens particularly establishes a multi-hop communication network between nodes (see fig 2 and Col 2 lines 28-43).

Stevens does not disclose establishing a path from host computer to target data storage device, sending a data operation request to a first data storage device connected to the host computer by one of a local area network and a storage area network, a data operation request including a data structure comprising opcode as a parameter identifying one of a plurality of types of calls, and forwarding the data operation request to an intermediate data storage device included in the communication path over a communication connection between the first storage device and the intermediate device in response to determining that the data operation request is a multipath multihop system call.

Bertin discloses encoded data (disclosed in Col 7 lines 55-64), where this encoded identification is an indication of the use of machine executable code in the nodes and host.

Bertin discloses within the network a destination path is determined as disclosed in Col 6 lines 1-17.

Bertin shows (see fig 2) a network consisting of a host computer (element 213) connected to a number of nodes (storage devices- elements 201-208), which forms a storage area network (element 200). The host and first storage device (node-element205) are connected through a LAN (element 214).

The origin node (first storage device), the transit node (intermediate node) and the destination node exchange information using the connection requests as disclosed in Col 11 lines 44-60.

The combined teachings of Stevens and Bertin does not specifically disclose a data operation request including a data structure comprising opcode as a parameter identifying one of a plurality of types of calls, and forwarding data operation request in response to determining the type of system call.

Ardon discloses an originating calling party (first data storage system) issuing a call request specifying call type data, in accordance with a code (Col 2 lines 56-Col 3 line 2) that identifies the party originating the call request as one of a plurality of call categories. In response to the call type, a switch processes the incoming call accordingly (Col 1 lines 42-58).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the establishing of a communication path and the routing of data as disclosed by Stevens, with the method provided by Bertin, who acknowledges the nodes as described by Stevens, and further provides a method with a defined

communication connection, and determines dynamically the optimal route. Bertin also provides the option of a predetermined path and an alternate communication path. Both Bertin and Stevens disclose setting up a communication network between a number of nodes based on a data table, Stevens simply establishes a multi hop network as disclosed in Stevens Col 1 lines 44-60. The motivation for the above mentioned modifications are to optimize and efficiently manage the connection and communication of nodes within a dynamic communications network (Stevens Col 1 lines38-41 and Bertin Col 5 lines40-43). The modifications also allow the routing of a multihop communication, with the option of a suitable path under regular conditions and also in the event of any failure or malfunction.

Furthermore, it would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the combined teachings of Stevens and Bertin, as disclosed above, with the identifier within a request as disclosed by Ardon, where that identifier identifies a call type, and that call type being one of a multihop type as disclosed by Stevens, and a multipath type as disclosed by Bertin.

<u>Claim 50</u> Stevens does not disclose the communication connection being one of a storage area network, a local area network and a device storage connection.

Bertin shows within the network (see Fig 2), a device storage connection (element 209) between nodes, a LAN connection (element 214) and a SAN (220) comprised of a number of nodes (elements 201-208). The motivation is the same as that for claim 49.

Claim 51 Stevens does not disclose dynamically determining a portion of the communication path and including data describing the portion in the data structure.

Bertin discloses dynamically determining a communication path and within a node, a route controller that calculates the optimum path through the network, including the number of intermediate nodes as disclosed in Col 8 lines 29-44.

The combined teachings of Stevens and Bertin does not disclose including the data describing the portion in the data structure.

Ardon discloses sending a data operation request that contains call data, which identifies the call as one of a number of categories (Col 1 lines 40-57).

Therefore it would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the establishing of a communication path and the routing of data as disclosed by Stevens, with the identifier within a request as disclosed by Ardon, where that identifier identifies a call type which identifies a call category, and that call type being one of a multihop type as disclosed by Stevens, and a multipath type as disclosed by Bertin.

Claim 52 Stevens does no disclose predetermining a portion of the communication path and including data describing the portion in the data structure.

Bertin discloses a pre-calculated path satisfying a connection request, and also calculating paths from the origin node (first storage device) to all possible destination nodes (target storage device), as disclosed in Col 5 line 60- Col 6 line 17.

The combined teachings of Stevens and Bertin does not disclose including the data describing the portion in the data structure.

Ardon discloses sending a data operation request that contains call data, which identifies the call as one of a number of categories (Col 1 lines 40-57).

Therefore it would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the establishing of a communication path and the routing of data as disclosed by Stevens, with the identifier within a request as disclosed by Ardon, where that identifier identifies a call type which identifies a call category, and that call type being one of a multihop type as disclosed by Stevens, and a multipath type as disclosed by Bertin.

Claim 53 Stevens does not disclose determining at least one additional path from the host to the target.

Bertin discloses a control field that includes encoded identification of a protocol to be processed in the node (disclosed in Col 7 lines 55-64). This encoded identification is a clear indication of the use of machine executable code in the nodes and host. Bertin discloses a pre-calculated path satisfying a connection request, and also calculating paths from the origin node (first storage device) to all possible destination nodes (target storage device), as disclosed in Col 5 line 60- Col 6 line 17. Bertin discloses a Routing Database Update that prepares for alternative communication paths as disclosed in Col 19 line 51- Col 20 line 30 (see fig 9). The motivation is disclosed within the rejection of claim 49.

Claim 54 Stevens does not disclose using at least one additional path as an alternate communication path upon the occurrence of a transmission problem using the first path.

Bertin discloses a control field that includes encoded identification of a protocol to be processed in the node (disclosed in Col 7 lines 55-64). This encoded identification is a clear indication of the use of machine executable code in the nodes and host. Bertin discloses alternative connections in the case of node or link failure (disclosed in Col 5 lines 5-7). Bertin also discloses an alternative path computation procedure as disclosed in Col 19 line 51- Col 20 line 30 (see fig 9). The motivation is the same as that disclosed in claim 49.

Claim 55, 66 Stevens discloses a system for establishing communication between nodes (storage device) in a mulithop network. Stevens particularly establishes a multi-hop communication network between nodes (see fig 2 and Col 2 lines 28-43).

Stevens does not disclose determining a type associated with the communication, where the communication comprises a data structure including a first parameter identifying the type from one of a plurality of types, in response to determining the communication is a multipath multihop system call, determining a communication connection between the data storage entity and a connecting data storage entity, and sending the communication to the connecting data storage entity using the communication connection.

Bertin discloses encoded data (disclosed in Col 7 lines 55-64), where this encoded identification is an indication of the use of machine executable code in the nodes and host (claim 66).

Bertin discloses within the network a destination path is determined as disclosed in Col 6 lines 1-17.

Bertin also discloses dynamically determining a communication path and within a node, a route controller that calculates the optimum path through the network, including the number of intermediate nodes as disclosed in Col 8 lines 29-44.

The origin node (first storage device), the transit node (intermediate node) and the destination node exchange information using the connection requests as disclosed in Col 11 lines 44-60.

The combined teachings of Stevens and Bertin does not specifically disclose determining a type associated with the communication, where the communication comprises a data structure including a first parameter identifying the type from one of a plurality of types.

Ardon discloses an originating calling party (first data storage system) issuing a call request specifying call type data, in accordance with a code (Col 2 lines 56-Col 3 line 2) that identifies the party originating the call request as one of a plurality of call categories. In response to the call type, a switch processes the incoming call accordingly (Col 1 lines 42-58).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the establishing of a communication path and the routing of

data as disclosed by Stevens, with the method provided by Bertin, who acknowledges the nodes as described by Stevens, and further provides a method with a defined communication connection, and determines dynamically the optimal route. Bertin also provides the option of a predetermined path and an alternate communication path. Both Bertin and Stevens disclose setting up a communication network between a number of nodes based on a data table, Stevens simply establishes a multi hop network as disclosed in Stevens Col 1 lines 44-60. The motivation for the above mentioned modifications are to optimize and efficiently manage the connection and communication of nodes within a dynamic communications network (Stevens Col 1 lines38-41 and Bertin Col 5 lines40-43). The modifications also allow the routing of a multihop communication, with the option of a suitable path under regular conditions and also in the event of any failure or malfunction.

Furthermore, it would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the combined teachings of Stevens and Bertin, as disclosed above, with the identifier within a request as disclosed by Ardon, where that identifier identifies a call type, and that call type being one of a multihop type as disclosed by Stevens, and a multipath type as disclosed by Bertin.

Claim 56, 67 Stevens does not disclose the data storage entity being a data storage device.

Bertin discloses a plurality of nodes (data storage device) that are used for storage as disclosed in Col 7 lines 24-44. The motivation is the same as that for claim 55.

Claim 58, 69 Stevens does not disclose the plurality of types of calls being at least one of: data, system call, other types of remote system call.

Ardon discloses an originating calling party (first data storage system) issuing a call request specifying call type data, in accordance with a code (Col 2 lines 56-Col 3 line 2) that identifies the party originating the call request as one of a plurality of call categories, where that call type can be considered as any other type of remote system call. The motivation is the same as that for claim 55.

Claim 59, 70 Stevens does not disclose the communication connection being one of a local are network, a storage area network, a data storage connection.

Bertin shows within the network (see fig 2), a device storage connection (element 209) between nodes, a LAN connection (element 214) and a SAN (220) comprised of a number of nodes (elements 201-208). The motivation is the same as that for claim 55.

Claim 60, 71 Stevens does not disclose connecting entity being another data storage device.

Bertin shows (see fig 2) a plurality of nodes (storage devices- elements 201-208) connected to one another through element 209. The motivation is the same as that for claim 55.

Claim 61, 72 Stevens does not disclose determining a communication path between the data storage entity and an endpoint, where the endpoint is another data storage entity and connecting the data storage entity is included in the communication path.

Bertin shows in Fig 2 a plurality of nodes (storage devices- elements 201-208) that communicate with one another. Within the network a destination path is determined

as disclosed in Col 6 lines 1-17. This determined path may consist of a number of intermediate nodes depending on the optimal path chosen (as disclosed in Col 8 lines 17-28). The origin node (first storage device), the transit node (intermediate node) and the destination node exchange information using the connection requests as disclosed in Col 11 lines 44-60. The motivation is the same as that for claim 55.

<u>Claim 62, 73</u> Stevens does not disclose determining at least one intermediate data storage device included in the communication path.

Bertin discloses a determined path that may consist of a number of intermediate nodes depending on the optimal path chosen (disclosed in Col 8 lines 17-28). The motivation is the same as that for claim 55.

<u>Claim 63, 74</u> Stevens does not disclose dynamically determining a portion of the communication path.

Bertin discloses dynamically determining a communication path and within a node, a route controller that calculates the optimum path through the network, including the number of intermediate nodes as disclosed in Col 8 lines 29-44. The motivation is the same as that for claim 55.

<u>Claim 64, 75</u> Stevens does not disclose predetermining a portion of the communication path.

Bertin discloses a pre-calculated path satisfying a connection request, and also calculating paths from the origin node (first storage device) to all possible destination nodes (target storage device), as disclosed in Col 5 line 60- Col 6 line 17. The motivation is the same as that for claim 55.

Claim 65, 76 Stevens does not disclose determining an alternate communication connection and transmitting the communication using the alternate communication connection upon the occurrence of a data transmission problem.

Bertin discloses alternative connections in the case of node or link failure (disclosed in Col 5 lines 5-7). Bertin also discloses an alternative path computation procedure as disclosed in Col 19 line 51- Col 20 line 30 (see fig 9). The motivation is the same as that for claim 55.

Claim 77, 84 Stevens does not specifically disclose removing a first portion of data associated with the data operation request and sending a second portion of the data to a second data storage device in the data operation request.

Bertin discloses a node updating information about the network users and resources, and updating paths where necessary (Col 7 lines 24-44). Bertin also discloses a header, which specifies a logical connection (Col 16 lines 31-40). It would have been obvious to one of the ordinary skill in the art at the time of the invention that in the case of an update at the node, a logical connection specified by the header may change, therefore replacing a previous logical connection (first portion) with an updated connection second portion). Furthermore Bertin discloses no need for a destination address one a connection has been established (Col 3 lines 15-55).

Bertin discloses a connection request and a path selection process determining a connection request (Col 11 lines 45-50) .

It would have been obvious to one of the ordinary skill in the art at the time of the invention to modify the process of establishing a multihop call as disclosed by Stevens,

by combine the header including updated logical connections within the request as disclosed by Bertin. The motivation for this modification is to specify the path for transmitting data to a destination and lower the overhead.

Claim 78, 85, 87 Stevens does not disclose the plurality of types of calls being at least one of: a system call indicating that the data request is to be performed by a first data storage device, or a remote system call indicating that the data request is to be performed by a data storage device directly connected to the first data storage device, other types of remote system call.

Bertin discloses reserving a path by sending a reservation request being sent through intermediate nodes Col 11 lines 15-29. Bertin also discloses specifying a destination parameter (Col 11 lines 45-50)

The combined teachings of Stevens and Bertin do not specifically disclose a call type.

Ardon discloses an originating calling party (first data storage system) issuing a call request specifying call type data, in accordance with a code (Col 2 lines 56-Col 3 line 2) that identifies the party originating the call request as one of a plurality of call categories, where that call type can be considered as any other type of remote system call.

It would have been obvious to one of the ordinary skill in the art at the time of the invention to combine the reservation path and destination address as disclosed within the request of Bertin, with the request specifying the call type as disclosed by Ardon. The motivation for this combination is to specify which node processes a call.

Claim 79, 86, 88, 89, 90, 91 Stevens does not specifically disclose a tag parameter identifying an issuer of the data operation request.

Bertin discloses a connection request using a parameter to identify the origin node (Col 11 lines 45-50). The motivation is the same as that for claim 1.

Claim 80 Stevens does not disclose the data structure including at least one of a flag representing an indicator with the data operation request, and a control parameter indicating whether a response is to be returned.

Bertin discloses specifying a connection request by a set of parameters (Col 11 lines 45-50).

Bertin discloses a response from transit nodes indicating an acceptance or rejection of a call request (Col 11 lines 55-60).

The motivation is the same as that for claim 1.

Claim 82 Stevens does not disclose the information returned comprising a data structure including at least one of a: return error code, a data payload returned from said target in response to the call, and an inline tag specifying a sender of the call.

Bertin discloses in response to a connection request, sending an acceptance or rejection notification (Col 11 lines 55-60)

Bertin discloses a possible node or link failure (error) as disclosed in Col 5 lines 5-8, where it would have been obvious to one of the ordinary skill in the art at the time of the invention to send a notification of a link failure (return error code).

Bertin discloses a bandwidth request packet being in the form of a packet, where it would have been obvious to one of the ordinary skill in the art at the time of the

invention that the retuned message would be on the form of a packet, where a packet contains a payload.

Bertin discloses sending a return message back to the origin node (Col 11 lines 55-60), where it would have been obvious to one of the ordinary skill in the art at the time of the invention that in order to send a message a destination is necessary, where in this case the destination would be the origin.

Claim 83 Stevens does not disclose an additional parameter specifying a number of communication paths wherein the data operation request is transmitting on all of the communication paths or return paths.

Bertin discloses a path selection process determining a connection request (Col 11 lines 45-50). Bertin discloses the option of a node supporting multiple connections set up requests simultaneously as disclosed in Col 4 lines 22-34. Bertin also dynamically assigns alternate paths as the topology database is constantly updated as disclosed in Col 9 line 32- Col 10 line 3. The path selection process uses an algorithm that uses as input parameters, the user requirements (modifiable) and the status of the network links and nodes as maintained by the topology database (modifiable) as disclosed in Col 12 lines 1-11. Furthermore Bertin discloses quality of service parameters that are defined as a set of measurable quantities as disclosed in Col 12 lines17-24. The motivation for these claims is the same as for claim 22.

Claim 92, 93 The rejection of claim 55 and 66 does not disclose a second parameter for identifying the plurality of communications paths .

Bertin discloses a number of preselected paths being computed and stored (Col 5 lines 25-39).

It would have been obvious to one of the ordinary skill in the art at the time of the invention to have more than one calculated path in case there is some form of failure.

Conclusion

2. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

(a) Cidon (US 5309433) discloses transmitting data from a source to a destination, where control code is contained within the header of data originating from a source, identifying the data as multicast data.

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher P Grey whose telephone number is (571)272-3160. The examiner can normally be reached on 6:30-3:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi Pham can be reached on (571)272-3179. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Christopher Grey
Examiner
Art Unit 2667

C Grey
10/27/05

CHI PHAM
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 26
10/28/05